Captive Non-Public Network (CNPN)

Secure, Customizable & High-Performance Private 5G Networks

What is Captive Non-Public Network (CNPN)?

A CNPN is a private 5G network designed for exclusive organizational use within a specific area, offering very high speed upto 1GB for optimal performance.

The CNPN operates as a closed 5G network that the general public or outside users cannot access, ensuring enhanced reliability for its dedicated users
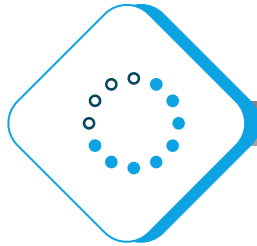
As it's not shared publicly, a CNPN offers enhanced security, allowing for tightly controlled and consistent performance.

Ideal for industry and campus environments with high connectivity demands, such as manufacturing plants, coal mines where cables are impractical, CNPNs offer robust massive IoT support for numerous connected devices

Why does your business need Captive Non-Public Network (CNPN)? (1/2)

CNPN for Business

1

Ultra-Low Latency & Reliable Communications

- Private 5G enables near-instant data transmission for modern industrial and enterprise use
- Ultra-Reliable Low-Latency Communication (URLLC) cuts latency to ~1 ms with over 99.999% reliability

2

High Device Density & Massive IoT Support

- Connects many devices and sensors at once without slowing performance
- One network supports thousands of IoT devices, sensors, and gadgets simultaneously
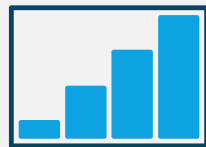
CNPN for Business

3

Full Security and Data Ownership

- With a private 5G network, an organization gains complete control over its connectivity and data
- Supports custom security, firewalls, and offline (air-gapped) setup if needed

4

Private Spectrum & QoS Control

- A CNPN typically works on dedicated spectrum or on network slice program
- No external users means zero interference and stable wireless performance

The BSNL Advantage: Scale, Trust and Service

Over ₹5,000 Cr in enterprise revenue

Over 61,000 Enterprise branches under the Platinum category alone

1. Known for Trust and transparent (1:1) billing
2. Relied by all PSUs, defense and critical government applications due to security
3. Supports uninterrupted functionality during adverse events or calamities

Clients

INCOME TAX DEPARTMENT · SBI · DRDO · NPCIL · L&T Technology Services · ICICI Bank · POWERGRID · AXIS BANK · HINDUSTAN ZINC Zinc & Silver of India · CRSP CONNECT · HDFC BANK · pnb · ECHELON EDGE Leading through Innovation · MB Government Hospital · Rajasthan Police · The Oberoi UDAIVILĀS UDAIPUR · ONGC · WONDER CEMENT · Sterling · JK LAKSHMI CEMENT · Radisson

Why BSNL CNPN?

BSNL is a **100% Government of India-owned** telecom company with a decades-long track record

Leveraging a talented internal pool and strategic partnerships with CNPN system integrators, BSNL is well-equipped to provide enterprise-class CNPN networks, further supported by its **14 empaneled CNPN partners** that its field units can utilize for enterprise 5G projects.

As per a DoT letter, BSNL holds **spectrum dedicated to 4G/5G** and enterprise networks, and is willing to set up both dedicated and shared spectrum on a case-by-case basis for its enterprise customers.

Enterprises benefit from **BSNL's vast pan-India network** for connectivity and backhaul, supported by local offices, call centers, and centralized NOC/SOC

BSNL offers CNPN in two ways (on OPEX basis)

CNPN-as-a-Service

The enterprise outsources the design, deployment, and management of the CNPN to a service provider.

The enterprise pays a recurring fee (subscription, usage-based) for the service, rather than investing in upfront infrastructure.

No need to invest in hardware, software, or network infrastructure, minimizing initial capital expenditure.

Easier to scale up or down the network capacity as the enterprise's needs change, without significant upfront investments.
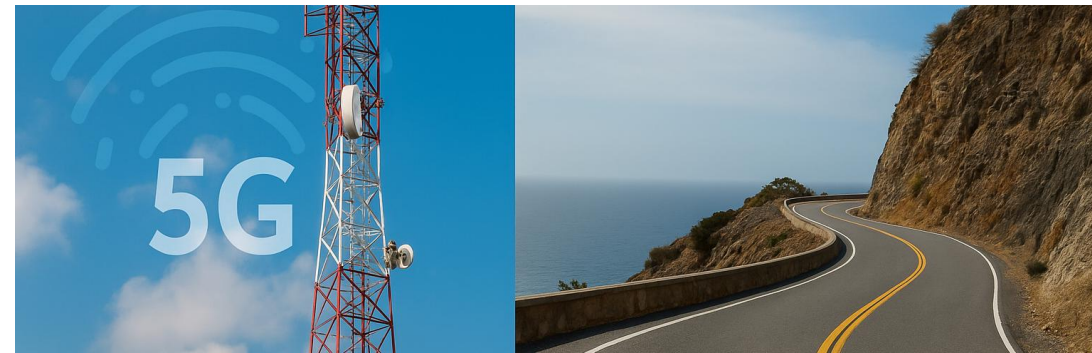
Isolated CNPN

The enterprise owns and manages the CNPN infrastructure and operations.

The enterprise owns the network assets and is responsible for maintenance, upgrades and future investments.

Requires significant upfront investment in hardware, software, and network components.

It demands significant in-house technical capabilities and can involve higher initial capital expenditure and ongoing operational expenditure.

6

BSNL offers CNPN in two ways (on CAPEX basis)

CNPN-as-a-Service

Managed and maintained by third-party providers (e.g., telecom operators or cloud services).

Enterprises get virtual slice of BSNL's 5G network with dedicated bandwidth, low latency, & controlled comm

Enables faster deployment, ideal for campus or pilot projects

Ideal for businesses needing private 5G without owning infrastructure
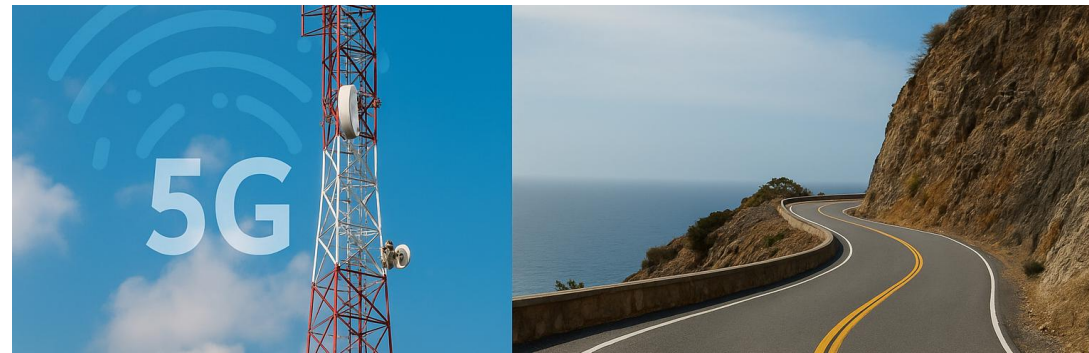
Isolated CNPN

Fully managed by the enterprise, requiring internal resources and expertise.

Business builds and operates its own private 5G network infrastructure on-site.

Ideal for large, complex, and long-term projects where businesses need complete control.

Ideal for businesses requiring complete control over infrastructure and security.

BSNL's 5G-CapNet Project | (Case Study)
India's first private 5G in coal mining

BSNL

1 **Partner Contributions**

- **Client:** Coal India Limited (CIL), Amlohri Project of Northern Coalfields Ltd (NCL)
- **C-DAC & CMPDI:** Technical expertise and innovation in mining solutions.
- **BSNL:** Pioneering India's indigenous telecom stack and ensuring project success with Made-in-India equipment.

2 **5G Use Cases envisaged**

- Voice & video call over Private 5G
- 5G Camera based surveillance
- IoT Sensors for Environmental Monitoring
- 5G Drone based Monitoring & Mine Mapping
- Virtual Reality Model of Amlohri Coal Mine
- Digital Twin of Load Haul Dump Operation
- 5G C-V2X based Collision Avoidance System
- Traffic Control for Haul Road Crossings

3 **Benefits**

- Ensures **connectivity** in vast, remote, and underground areas.
- Adapts to operational growth with **flexible and scalable** wireless infrastructure.
- Provides a robust, **secure network** for real-time operations and data protection.
- Boosts **efficiency** and safety with autonomous equipment and advanced monitoring.

4 **Alignment with National Vision**

- Promotes **self-reliance** through indigenous telecom technology (*Atmanirbhar Bharat*).
- **Boosts productivity** and operational safety for mining.
- Supports the vision of a **Digital India** and addresses India's **energy needs** with efficient mining operations.

Note: Centre for Development of Advanced Computing (C-DAC), Central Mine Planning & Design Institute (CMPDI), 5G Captive Non-public Network for Integrated Voice, Video & Data Communication in Opencast Coal Mines (5G-CapNet), awarded by Coal India Limited (CIL)